

### In this Issue

- Scripting the Success Story of Indian Sugar Industry
- Sugar Tech - 25 Years of Glorious Service
- SSRP : At a Glance
- About 7th IAPSIT International Sugar Conference
- Forthcoming Sugar Conferences

### Sugar Tech International Conference

8th IAPSIT International Sugar Conference  
Ho Chi Minh City, Vietnam  
October, 2024

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Celebrating 25 Years of Sugar Tech Publication

### President Speaks

## Sustainability of the Indian Sugar Industry

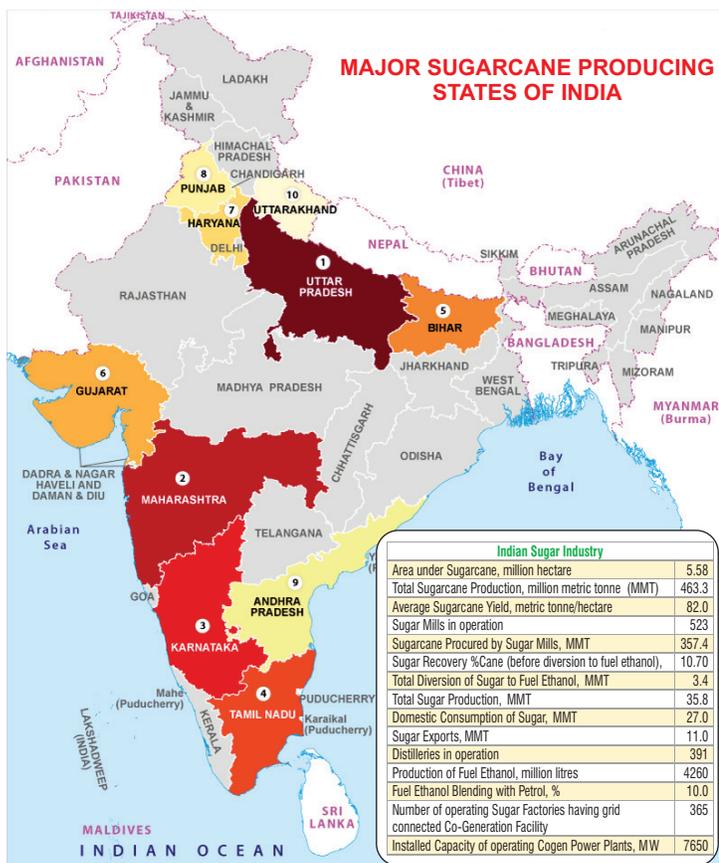
India has become the largest sugar-producing country with a record sugar production of 35.8 million metric tonnes, after the diversion of about 3.4 million metric tonnes of sugar to fuel ethanol. The country is now the largest producer of sugar in the world and second largest exporter of sugar with a record export of 11.0 million metric tonnes of sugar in the year 2021-22. The sugar industry is producing 370–400 million tons (MT) cane, 31-35 MT white sugar and 6–8 MT jaggery and khandsari every year. Besides, about 4260 million liters of alcohol and 7650 MW of power and many chemicals for industrial uses. The industry has the capability to export around 3500 MW of power to the national grid. Sugar industry has gradually transformed into sugar complexes by producing sugar, bioelectricity, bioethanol, biomanure, bio-CNG and chemicals. In the last few years there is more than 10-fold increase in ethanol production and over 20-times increase in sugar exports, which have helped India's sugar mills to become "self reliant" and also make faster payment of dues to farmers. Sugar industry has an annual turnover equivalent to about USD 12 billion. The contemporary sugar sector has the potential to influence several key Sustainable Development Goals (SDGs) through practicing climate resilient green technologies in production and processing and several green diversification options to ethanol, cogeneration of energy using sugarcane bagasse and bio-based products.



The sugar sector has also emerged as a significant carbon credit and Green Energy Producer viz. Bioelectricity, Bioethanol and BioCNG and supporting highly ambitious ethanol blending programme (EBP) of Government of India of E 20 and beyond. The country has successfully achieved blending target of 10% fuel ethanol with petrol in 2021-22, and has also set an ambitious target of 20% ethanol blending with petrol by the year 2025-26. Green Technologies & Green Energy are major initiatives in view of their importance for the environment, energy security, and sustainable development of the sugar industry. In the XXXI ISSCT Congress, our esteemed delegates and guests will have opportunity to see the Indian cane sugar industry in the fields, in the factories and diversification plants, including cogeneration and 2G ethanol manufacturing unit. The Trade Exhibition in Congress will showcase our success story where a large number of Indian technology developers, turn-key plant manufacturers, small and medium enterprises, chemical manufactures will be participating. It will be an opportune time of sharing technical knowledge, visit premier sugarcane and sugar research institutes and see the Wonder Cane varieties- Co 86032 and Co 238.

On behalf of the Society for Sugar Research and Promotion and Editorial Board of Sugar Tech, we extend a very warm welcome to delegates of the XXXI ISSCT Congress at Hyderabad, India.

S. Solomon



## Scripting the Success Story of Indian Sugar Industry



India is a major sugarcane and sugar-producing country with a significant representation in the global sugar market. Innovative technology interventions for sugarcane development, production, diversification, and sugar processing have catalyzed the industry's transition to a more sustainable, biobased, and profitable model, allowing it to progressively become self-sufficient. Sugarcane and sugar research institutions' innovations, together with favourable government policies on biofuel, diversification, and sugar export, aided in

increasing sugarcane and sugar production in the country.

**Bio-intensive Sugarcane Agriculture:** Wonder cane variety Co 0238 is grown on about 2.58 million hectares in subtropical India, with a high average yield of 81 t/ha. The sugar sector gained an additional advantage of INR 23,541 crores as a result of increased cane yield (+19.6 tons/ha) and sugar recovery (+2.08 units). Another commercial variety, Co 86032, is a high-yielding and high-sugar cultivar that is particularly popular in the country's tropical regions and is grown on more than 0.8 million hectares. The development of sugarcane varieties like Co 0118, Co 0238, CoSe 01421, Co 05009, CoLk 94184 and CoS 95255 has resulted in increased sugar production in subtropical zone mainly in Uttar Pradesh, which has the highest area under sugarcane. New, improved varieties, viz., Co 11015, Co 12009, Co 13035, Co 15023, CoLk 14201, CoLk 12209, CoS 13235, CoS 13231 are now available to sustain sugarcane production in the country.

Green bio-intensive technologies encompassing sustainable strategies and diversification to ancillary products have contributed a lot to sustaining sugar production in the country. These include Furrow & micro-irrigation, Integrated Nutrient Management (INM) by supplementing the recommended inorganic fertilizers with green manuring, crop residue incorporation & trash mulching, use of biofertilizers, inter-cropping, FYM, sugar industry by-products. Bio-agents like *Trichoderma* spp. for disease management, *Trichogramma*, *Cotesia* for managing the borer complex, bio-control of woolly aphid and *Pyrilla*, use of Light-Pheromone traps; EPN etc. are some of the successful biocontrol strategies prevalent all over the country.

**Diversification to Green energy:** Bio-ethanol from sugarcane is a game-changer for the Indian sugar industry to enhance India's energy security. The target of 10% blending under the Ethanol Blending Programme (EBP) has been achieved, translated into a forex impact of over INR 41,500 crores (USD 510 million), reduced GHG emissions of 2.7 million MT and also led to the expeditious payment of over INR 40,600 crores (USD 500 million) to farmers. With the sugar industry spearheading the program and all the initiatives taken by the Government, the EBP programme is on track to achieve the target of 20% blending by 2025-26. The industry is also producing bio-electricity and bio CNG on a large scale.

**Sustainable Practices:** The industry is creating sustainable value for the farmers by improving resource efficiency, revitalizing ecosystems and uplifting rural communities. Sugarcane farmers, especially smallholders, are trained and exposed to sustainable agriculture practices in sugarcane cultivation, including water-saving technologies, green technologies, mechanization, bio-pesticides, bio-fertilizers & bio-agents etc., thus limiting any negative impact on the environment. The current focus is on using fewer resources and low emissions and to process every co-product as a feedstock for another value-added product. Many sugar mills have adopted suitable biorefinery models using agro-feedstock, mainly sugarcane & its

derivatives, to produce ethanol and bagasse-based biochemicals, specialty sugars/chemicals.

**Farmer's Welfare Programs:** Sugar industry has a robust sugarcane development programme that works in association with the national sugarcane institutes to transform the lives of the farmers through socio-economic empowerment initiatives. These include knowledge-sharing and awareness, sugarcane production-management technology support, training modules, livelihood enhancement initiatives, and soil health programmes, increasing productivity and farmers' income while simultaneously elevating the standard of living of cane farmers and their families.

The industry also fulfils its Corporate Social Responsibilities leading to the overall betterment of its stakeholders. The CSR activities that focus on the promotion of education, health care, drinking water & sanitation, gender equality and empowering women has enabled the

Indian sugar industry to align itself with the 2030 Agenda for Sustainable Development Goals (SDGs).

### National Sugarcane and Sugar Institutes- Partners in Prosperity

**The Indian Institute of Sugarcane Research (IISR), Lucknow,** was established in 1952 with the mission of *Enhancement of sugarcane production, productivity, profitability and sustainability to meet future sugar and energy requirements of India.* The Institute has been working with the mandate of basic, strategic and adaptive research on production and protection in sugarcane, breeding improved varieties for

subtropical regions of the country, and dissemination of technologies and capacity building (<https://iisr.icar.gov.in/iisr/pages/pme.jsp>)

**Sugarcane Breeding Institute (SBI), Coimbatore,** was established in 1912 and is a World Leader in sugarcane breeding and genetics. The main objective of SBI is evolving superior varieties of sugarcane suitable for various agro-climatic zones in India. Several new and improved sugarcane varieties, including Co 0238 and Co 86032, were developed at SBI, Coimbatore (<https://sugarcane.icar.gov.in>).

**U.P. Council of Sugarcane Research, Shahjahanpur (UPCSR).** Being the first state to produce sugarcane, Uttar Pradesh plays a crucial role in the nation's agricultural economy. A sugarcane research station was founded in Shahjahanpur in 1912 with an eye toward the welfare of cane growers in particular and the advancement of industry in general. (<https://www.upcsr.org/>)

**National Sugar Institute (NSI), Kanpur,** established in 1936, is involved in research, training and advisory services to the sugar and allied industry. The institute has developed sustainable technologies in the area of sugar processing, diversification and environment management. It also renders necessary assistance for developing co-generation units in sugar mills and sale of Indian Sugar Standards has been entrusted to National Sugar Institute, Kanpur. (<http://nsi.gov.in>)

**Vasantdada Sugar Institute (VSI), Pune,** was established in the year 1975 by the sugarcane grower members of cooperative sugar factories in the State of Maharashtra. The Institute performs, under one umbrella, all scientific, technical and educational functions relevant to the sugar industry (<https://www.vsisugar.com/index.php>).

**All India Coordinated Research Project on Sugarcane (AICRP)** has been working in the country since 1970 through a network of Sugarcane Research Stations of AICRP on Sugarcane, State Agricultural Universities (SAUs), State Government Departments and Non-Government Organizations. Its varietal development programme has enhanced sugarcane productivity in the country by 2.7 times; from 130 mt to nearly 349.5 mt, since 1970-71. (<https://iisr.icar.gov.in/iisr/aicrp/index.htm>)

**Dr. Priyanka Singh**  
UPCSR, Shahjahanpur, UP



## Sugar Tech – 25 Years of Glorious Service to the Global Sugar Industry



Dr. G. P. Rao

**Sugar Tech** - has successfully completed its 25 years of glorious journey. The idea to publish **Sugar Tech** journal was conceptualized in 1998 at Sugarcane Research Station Campus, Kunraghat, Gorakhpur, India. In 1999, the Society for Sugar Research & Promotion was registered with its major objective to publish an international research journal on sugar crops and related industries, and late Shri Ashok Datta provided the space for the society activities at New Delhi and also took the responsibility of printing the early issues

of **Sugar Tech** journal. The Editorial Board and Advisory Board were constituted and the first issue (Vol. I&II) was published in 1999, with 10 articles. The **Sugar Tech** journal became an official publication of International Conferences viz. IS-2004, IS-2006, IS-2008, IS-2011, IS-2014, IS-2019 and IS-2022 held at Nanning (China), Guilin (China), Al-Arish (Egypt), New Delhi (India), Nanning (China), Udon Thani (Thailand) and Lucknow (India). In 2008, the global publishing company Springer took over the publication of **Sugar Tech** with four issues a year which was really a milestone in the journey of the journal and subsequently increased to six issues in 2020. Ever since we started publishing in association with Springer Nature India Pvt. Ltd., the quality of the published articles has increased substantially. On time publication of high quality papers during the last two and half decades was our priority. Special theme based issues were also planned to increase the visibility and scope of the journal. The release of the 2011 journal citation report from Thomson Reuter added to our delight when **Sugar Tech** fetched its maiden impact factor (IF) of 0.431 and since then there is no looking back. At present, **Sugar Tech** is a peer reviewed bi-monthly research journal, publishing high quality research articles and reviews on the innovative and eco-friendly technologies related to the improvement, production, processing and diversification of sugar crops (sugarcane, sugar beet, sweet sorghum, stevia, palm sugar, etc) and their residues, aligning with the spirit of SDGs. It is one of the leading journals in the world on sugar crops and ancillary industries with current ISI Impact Factor of 1.872 (2021), over 103478 downloads per year, Scopus h-index of 31 and quartile (Q2), circulated in over 127 countries.

The journal is cited in more than sixty international citation services, with ISI Thomson Reuters, SCOPUS, Google Scholar, INSDOC, Elsevier Biobase, Indian Science Abstracts, SCIMago, Science Citation Index Expanded (SciSearch), Chemical Abstracts Service (CAS), AGRICOLA, CAB Abstracts, Biology & Environmental Sciences, EBSCO Discovery Service, EMBiology, Global Health,

Indian Science Abstracts, WTIAG, Wanfangetc. The high Impact Factor has also led to a dramatic increase in the number of submissions. It is encouraging to see **Sugar Tech** articles being cited by the major internationally recognized high Impact journals and many other publications.

The great success of **Sugar Tech** would not have been possible without the crucial support of the Society for Sugar Research & Promotion (SSRP) and International Association of Professionals in Sugar & Integrated Technologies (IAPSIT), the editors, advisory board members, reviewers and authors who constantly ensured the quality of the papers being published. We would like to thank Springer Nature Pvt. Ltd. for co-publishing **Sugar Tech**, which has become a milestone for SSRP. We are grateful to our editors, authors, society members, Springer team, advisory team and others for facilitating the journey of **Sugar Tech** from a hard copy format to an online platform of international standards, thereby disseminating scientific contents to a global audience. The **Sugar Tech** with the support from Springer Nature has been making rapid and consistent progress since 1999. We are hopeful that **Sugar Tech** will reach the pinnacle of expectations of scientists working in the area of sugar crops, sugar processing technologies and by-products. Currently, a large number of articles published in **Sugar Tech** journal address social, environmental, and economic issues related to the SDGs. Recently two special issue were published with the theme *Innovation for Sustainability of the Sugar Agro-Industry* (March-April, 2022) and *Diversification of Sugar Crops for Value Addition* (Nov - Dec, 2021). These issues highlight the shared vision for a sustainable global sugar industry as well as mapping SDGs related interdisciplinary research priorities to broader the global collaboration and partnership.



ISI Impact Factor: 1.872

In view of the growing importance of sugarcane varieties in sustaining global sugar industry, a special issue was published on the *History of Sugarcane Breeding, Germplasm Development and Related Molecular Research* (Jan-Feb, 2022). This is for the first time that detailed and comparable information about sugarcane genetics and breeding updates from all the major sugarcane producing countries were brought together. This issue is a valuable repository for the breeders, scientists, industry investors, technologists and students involved in sugarcane improvement programme all over the world. In 2022, we have received more than 450 articles, published all the issues well in time and have also worked out strategies for the growth and promotion of the journal with a special focus on improving the quality of articles.

As Editor-in-Chief of **Sugar Tech**, it becomes our moral responsibility to ensure continuity of the activities of **Sugar Tech** and SSRP with greater zeal and dedication. We would like to thank our eminent editors across the globe, who have been instrumental in supporting the editorial activities of **Sugar Tech**.

**Sugar Tech** being one of the technical sponsors of the XXXI ISSCT Congress, Hyderabad has onus to publish high quality research papers of the congress in forthcoming issues of journal. On behalf of the **Sugar Tech** Editorial Board and SSRP, we welcome all the ISSCT delegates and hope that you will continue to patronize **Sugar Tech** for publishing your valuable research and review articles. Our sincere greetings and thanks to the esteemed contributors, readers and the publisher.

**G.P. Rao and S. Solomon**  
 Editor-in-Chief, **Sugar Tech**

(<https://www.springer.com/journal/12355/>)

### Subscription Information

**SugarTech** is available in 6 volumes a year (bimonthly). Subscribers may contact the customer care at the following e-mail addresses :

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 e-mail: sugartech@rediffmail.com  
 website : [www.springer.com/12355](http://www.springer.com/12355)



## Society for Sugar Research & Promotion - At A Glance

Society for Sugar Research & Promotion (SSRP) was registered in 1999 with aims and objectives to constitute a forum at international level for bringing together individuals and organizations engaged in R&D in sugar crops and related industries. It is an active platform to develop international research/development linkages and disseminate up-to-date technologies; to explore new areas related to cane production technologies, cane developmental activities and logistics management; to propagate utilization of non-conventional and renewable sources of energy and development of improved systems and devices in sugar industry and to organize national and international symposia, seminars and workshops. The most important activity of SSRP is to publish Sugar Tech- an international journal of sugar crops and related industries.

### Mission

To engage like-minded intellectuals in serving the society through science-led interventions in sugar crops, related industry and sugar processing.

### Membership

SSRP includes professional of all disciplines in science and technology together with people from other walks of life. For membership details please visit [www. https://ssrpglobal.net/](http://www.https://ssrpglobal.net/)

### SSRP activities

- National and International Consultancy on Sugarcane Agriculture
- Publication of International Journal - **Sugar Tech**
- Publication of Sugar Tech Newsletter (Half yearly)
- Professional Linkages with International Sugar Industry/Organisation/NGOs
- Conference/Symposium Organisation and Management
- Capacity Building Programs for Sugar Industry Professionals
- Publication of Books/Monographs/Scientific Editing/Preparation of Conference Material

Website : [www. https://ssrpglobal.net](http://www.https://ssrpglobal.net)

## 7<sup>th</sup> IAPSIT International Sugar Conference & Sugarcon-2022

The Sugar Conference SUGARCON-2022 & IAPSIT-ISC 2022 on *Sustainability of the Sugar and Integrated Industries: Issues and Initiatives* was held at ICAR-Indian Institute of Sugarcane Research (ICAR-IISR), Lucknow, from 16-19 October 2022. The four day International Sugar Conference was organized at ICAR-IISR, Lucknow, jointly under the aegis of SSRP and IAPSIT. Nearly 350

delegates from India and eight other countries of the world have participated in this Conference. The inaugural ceremony of SUGARCON 2022 began in hybrid mode at the auditorium of ICAR- Indian Institute of Sugarcane Research, Lucknow on 16.10.2022. Dr T R Sharma, Deputy Director General (Crop Sciences), ICAR was the Chief Guest.



## Forthcoming Sugar Conferences

### 3rd International Conference on Sustainability: Challenges & Opportunities in Global Sugar Industries

12-14 January, 2024

#### Venue :

Vsantdada Sugar Institute,  
Pune, India

[www.vsisugar.com](http://www.vsisugar.com)

### Sugar Tech International Conference

#### 8th IAPSIT International Sugar Conference

Ho Chi Minh City, Vietnam

October, 2024

Innovations for Sustainability of the Global Sugar Industry

#### Organized by:

Society for Sugar Research & Promotion, New Delhi & International Association of Professionals in Sugar and Integrated Technologies.

#### Organizing Secretary:

Dr. G.P. Rao

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### 2nd International Conference on Cane and Sugar 2024

#### Towards BCG Economy: Smart Farm to Bio Industry

5-7 July, 2023

#### Venue :

Asawin Grand Convention Hotel  
Bangkok, Thailand

Email : [tssctinfo2@gmail.com](mailto:tssctinfo2@gmail.com)

Website : [www.tssct.org](http://www.tssct.org)

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